

Soldier Safety Skills -- Heat Injury Prevention

☆ Why does Heat Stroke kill servicemembers every year -- despite the thousands of hours of heat injury prevention briefings?

1. Misunderstanding about the speed of heat stroke onset. During hard work, e.g., a quick march with a field load, a soldier can go from optimum performance to heat stroke in a matter of minutes. Heat injury prevention literature/briefings often give the impression that heat injury onset is sequential over a period of time, i.e., personnel will first suffer heat cramps, then heat exhaustion, then heat stroke.

2. Underestimation of soldier workloads. Supervisors / exercise observers frequently underestimate soldier work/exertion levels. A recent military heat injury prevention article compared the likelihood of soldier heat injuries to, "...a civilian worker desperately fanning herself in an non-air conditioned office." There is little correlation of the heat stresses of soldering activities with office work.

3. Underestimation of the impact of additional heat stressors, e.g., wear of MOPP gear, body armor, field pack / weapons load.

4. Over emphasis on water intake as the primary prevention of heat injuries. While proper water intake is vital, work / exertion load management is just as critical during high exertion activities. Soldiers can neither carry, nor drink enough water to prevent heat stroke during high-exertion activities e.g. quick marches, heavy materials handling, MOPP wear. Proper water intake must be balanced with the other prevention measures: acclimatization, conditioning, temperature monitoring, timely first aid, medical treatment.

70th RSC Safety Office

Heat Injury Countermeasures:

1. Monitor Wet Bulb Globe Temperatures and activate heat injury prevention measures when temps approach high 70's, or when MOPP suits worn. Add minimum of 10° F for MOPP suit wear.

2. Adjust Work/Rest schedules IAW the table below. Understand table's limitations -- Average Acclimated soldier, the chart doesn't address: previous heat injury, different levels of physical conditioning, medications, etc.

Fluid Replacement Guidelines for Warm-Weather Training

3. Brief all soldiers on heat injury symptoms - Activate Buddy System. Heat Injury Symptoms watch. (Average Acclimated Soldier wearing Hot-Weather BDUs)

		EASY WORK		MODERATE WORK		HARD WORK	
Heat Category	WBGT Index °F	Work/Rest minutes	Water Per Hour	Work/Rest minutes	Water Per Hour	Work/Rest minutes	Water Per Hour
1 Green	78 - 82	No limit	1 / 2 qt	No limit	3 / 4 qt	40/20 min	3 / 4 qt
2 Green	82 - 85	No limit	1 / 2 qt	50/10 mins	3 / 4 qt	30/30 min	1 qt
3 Yellow	85 - 88	No limit	3 / 4qt	40/20 mins	3 / 4qt	30/30 min	1 qt
4 Red	>88 - 90	No limit	3 / 4qt	30/30 min	3 / 4 qt	20/40 min	1 qt
5 Black	>90	50/10 min	1 qt	20/40 min	1 qt	10/50	1 qt

Heat Injury Symptoms & First Aid

- **Heat Stroke symptoms:** Lack of sweating -- red, flushed hot dry skin.
First Aid: Begin immediate cooling and call for, or evacuate to immediate medical attention. Move victim to shade, cool with ice packs if available, but do not immerse in ice water, elevate feet. If ice is not available, soak or douse victim with water and fan to cool. Continue to cool until relieved by medic / doctor.
- **Heat Exhaustion symptoms:** Heavy sweating, headache, weakness, dizziness, nausea, cramps, rapid breathing, possible tingling in hands/feet, possible loss of appetite.
First Aid: Lay victim in cool shady spot. Elevate feet and loosen clothing. Pour water on victim and fan to cool. If conscious, have victim drink canteen of cool water with 1/4 teaspoon dissolved salt. If victim doesn't recover in one hour, evacuate to nearest aid station.
- **Heat Cramps:** Muscle cramps of arms, legs and/or stomach, heavy sweating, possible extreme thirst.
First Aid: Move victim to shade and loosen clothing, have victim drink an 8 ounce cup of cool water every 15-20 minutes, not to exceed 1 1/2 quarts per hour. If cramps persist, dissolve 1/4 teaspoon table salt in one quart of water and have victim slowly drink it.

Don't try and force water to any unconscious victim.

70th RSC Safety Office